

REMARKS

The present invention is a portable telephone assembly. In accordance with an embodiment of the invention, a portable telephone assembly includes a first telephone portion 200 and a second portion 300 for attachment to a user's wrist. The telephone part comprises a primary power source 280. The first portion is, when detached from the second portion, independently operable as a portable telephone and is arranged to be detachably connectable to the second portion as described in paragraph [0015] of the Substitute Specification. The second portion 300 comprises a battery 315 operable to supplement the primary power source when the first and second portions are connected and the battery comprises rechargeable cells distributed about the second portion.

Claims 1, 2, 5, 6, and 9 stand rejected under 35 U.S.C. §102 as being anticipated by United States Patent 6,473,630 (Baranowski et al). With respect to claim 1, the Examiner reasons as follows:

Regarding claim 1, Baranowski discloses a portable telephone assembly comprising first and second portions, wherein the first portion: comprises a primary power source; is independently operable as a portable telephone (101); and is arranged to be detachably connectable to the second portion (107), and the second portion (107): is arranged to be removably attachable to a user; and comprises an auxiliary power source operable to supplement the primary power source when the first and second portions are connected. (Col. 3 line 61-Col. 4 line 28).

These grounds of rejection are traversed with respect to newly submitted claims 10-16 for the following reasons.

Claim 10, which is comprised of the subject matter of claims 1, 2, and 3, recites a portable telephone assembly comprising: first and second

portions; and wherein the first portion comprises a primary power source, is arranged to be detachably connected to the second portion and is independently operable as a portable telephone when detached from the second portion; and the second portion is arranged to be removably attachable to a user, comprises a battery operable to supplement the primary power source when the first and second portions are connected and the battery comprises rechargeable cells distributed about the second portion. This subject matter is not taught by Baranowski et al.

Baranowski et al teach a headset for wireless communicating with a personal electronic device such as a wireless phone. A secondary battery in the headset provides power for the headset and is rechargeable from a primary battery in the personal electronic device. See the Abstract. Therefore it is seen that Baranowski et al do not teach a second portion "arranged to be removably attachable to a user, comprises a battery operable to supplement the primary power source when the first and second portions are connected, and the battery comprises rechargeable cells distributed about the second portion. In the first place, the battery of the Baranowski et al telephone provides charging power to the secondary battery in the headset permitting recharging of the headset in the field. However, the relationship recited in claim 10 is the opposite in that the battery of the second portion, which is removably attachable to a user, supplements the primary source of the first portion and comprises rechargeable cells distributed about the second portion which is not suggested by Baranowski et al.

Claim 11, which corresponds to claim 4, recites the second portion is removably attachable to a user's wrist. Baranowski et al's headset does not meet this limitation and there is no basis in the record why it would be obvious to modify Baranowski et al's headset to be attachable to a user's wrist.

Claim 12, which corresponds to claim 5, recites charging circuitry provided to recharge the primary power source from the battery. The relationship recited in claim 10 regarding the battery as supplementing the primary source is not taught and furthermore charging circuit provided to recharge the primary power source which is the wireless phone 107 from the wireless headset 101 is not taught.

Claim 13, which corresponds to claim 5, further limits claim 12 in reciting that the charging circuitry is disposed in the second portion. Since the charging circuitry is recited in claim 12 as recharging the primary source, there is no counterpart of charging circuitry disposed in the second portion in Baranowski et al which charges the primary power source as recited in claim 13.

Claim 16 is patentable for the same reasons set forth above with respect to claim 10.

Claims 1, 2, and 4 stand rejected under 35 U.S.C. §102 as being anticipated by United States Patent 6,192,253 (Charlier et al). With respect to claim 1, the Examiner reasons as follows:

Regarding claim 1, Charlier discloses a portable telephone assembly comprising first and second portions, wherein the first portion: comprises a primary power source; is independently operable as a portable telephone and is arranged to be detachably connectable to the second portion, and the second portion: is arranged to be removably attachable to a user; and comprises an auxiliary power

source operable to supplement the primary power source when the first and second portions are connected. (Col. 3 line 14-Col. 4 line 36)

This ground of rejection is traversed with respect to claim 10-16 for the following reasons.

Charlier et al teach a wrist carried radio telephone which has a radio transceiver 16 disposed within an upper housing 18 and a second lower housing 20 which includes a battery 28 and speaker 62. The device of Charlier et al is meant to be operated as a one-piece assembly as may be seen in Fig. 5 to function as a radio telephone and therefore does not meet the recitation in claim 10 that the first portion is independently operable as a telephone when detached from the second portion.

With respect to claim 11, there is no counterpart of a first portion which is detachably connectable to a second portion which is independently operable as a portable telephone when detached from the second portion and is removably attachable to a user's wrist.

Claim 3 stands rejected under 35 U.S.C. §103 as being unpatentable over Baranowski et al in view of United States Patent 5,889,737 (Alameh et al). Alameh et al has been cited as disclosing a battery comprising cells distributed about a second portion. This teaching does not cure the deficiencies noted above with respect to Baranowski et al in the discussion of claim 10 above.

Claims 7 and 8 stand rejected under 35 U.S.C. §103 as being unpatentable over Baranowski et al in view of United States Patent 6,275,681 (Vega et al). Vega et al has been cited as disclosing a communications system with contactless inductive charging. This teaching does not cure the

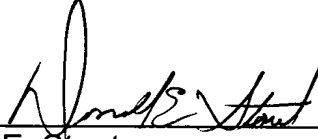
deficiencies noted above with respect to claims 14 and 15 which correspond to claims 7 and 8.

In view of the foregoing amendments and remarks, it is submitted that each of the claims in the application is in condition for allowance. Accordingly, early allowance thereof is respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 C.F.R. §1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (1156.41081X00) and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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Attachments

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SUBSTITUTE SPECIFICATION

TWO PART PORTABLE TELEPHONE CONFIGURED TO BE WORN ABOUT THE PERSON

PAT 01001 US

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] This invention relates to a two-part mobile telephone configured to be worn about the person, particularly in the manner of a wristwatch.

Description of the Prior Art

[0002] Portable telephones have become ever smaller and lighter since portable telephones first became widely available for use by the general public. Current portable telephones are very compact and lightweight, and manufacturers are keen to develop telephones which are considered personal accessories, to be carried or worn about the person, rather than separate articles which can be more easily misplaced.

[0003] Part of the inspiration for the present invention came from the ~~realisation~~realization that people are generally accustomed to wearing a watch, and do not generally object to wearing one all day, every day. Indeed, many watches, particularly of the diving or chronograph type, can weigh considerably more than many of the more recent portable telephones. For instance, the Nokia® 8890 telephone weighs 91g and has a volume of 70cc, whereas a typical sports or diving watch can weigh well over 100g. The weight of such watches is often regarded as a sign of quality.

[0004] The majority of the weight of such sports watches may be made up of the metalwork of the strap and casing. If the weight of such watches can be capitalised—capitalized upon, and used instead for functioning circuitry, a telephone can be constructed which the user can wear around his wrist, in the manner of a watch, without noticing any appreciable difference in weight compared with a regular watch.

[0005] A wrist-mounted portable telephone is disclosed in co-assigned patent GB_2317300B. In this case, a telephone element 5 is arranged to be detached from a wrist band 2, allowing the user to use the detachable element in the same manner as a regular telephone.

[0006] A problem with such an apparatus is the limited volume available in the telephone element 5 itself. The only space available for the battery is in the main body 7 of the telephone 5. Such limited volume restricts the capacity of the battery, which is generally the single bulkiest component of a portable telephone. A limited battery capacity in turn impacts upon the time for which the telephone may be used between charging cycles, causing inconvenience to the user by the frequency of re-charges which are necessary to maintain the telephone in functioning order.

SUMMARY OF THE INVENTION

[0007] For a better understanding of the present invention, and to understand how the same may be brought into effect, the invention will now be described, by way of example only, with reference to the appended drawings in which:

According to the present invention, there is provided a portable telephone assembly comprising first and second portions wherein the first portion: comprises a primary power source; is independently operable as a portable telephone; and is arranged to be detachably connectable to the second portion, and the second portion: is arranged to be removably attachable to a

user; and comprises an auxiliary power source operable to supplement the primary power source when the first and second portions are connected.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Figure 1 shows a prior art wrist-mounted telephone;

[0009] Figure 2 shows an exploded view of a telephone apparatus according to an embodiment of the present invention;

[0010] Figure 3 shows a charger for use with the telephone apparatus of Figure 2; and

[0011] Figure 4 shows a schematic illustration of the power connections associated with embodiments of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0012] Figure 2 shows an exploded view of a wrist-mounted telephone apparatus 100 according to an embodiment of the invention. The telephone apparatus 100 comprises two parts: a detachable telephone part 200, and a strap or bracelet-like part 300 for attachment to a user's wrist.

[0013] The telephone part 200 is shown separate from the strap part 300 for clarity. In reality, in the configuration shown, it would be located flush against the strap 300. The telephone part 200 comprises all the circuitry and elements normally associated with a portable radio telephone, as would be ~~are known by the skilled man~~. The telephone part comprises three major portions: an upper portion 210, a central portion 240 and a lower portion 270.

[0014] A microphone element is positioned in the lower portion 270. A battery (not shown in Figure 2) is positioned in the lower portion also. An earpiece and antenna are positioned in the upper portion 210. The central

portion 240 accommodates the bulk of the circuitry of the telephone, including a display 250, and a number of user-operable input keys 260. The keys are for controlling the operation of the telephone, and may be disposed on the front surface, as well as along one or more edges of the telephone 200.

[0015] When not in use, the telephone part 200 attaches firmly to the strap part 300. In order to use the telephone, the user operates the release mechanism to free the telephone from the strap. The release mechanism can take many forms, and its exact operation is not critical to the operation of the invention.

[0016] For instance, a release mechanism similar to that described in the aforementioned ~~prior art document~~ Patent GB_2317300B could be used. The mechanism therein described comprises two user-operable release latches which are situated on opposing edges of the telephone. The latches are arranged to engage with complementary parts on the bracelet and so lock the telephone to the bracelet. To remove the telephone part, the user simply squeezes the two latches, which unlocks the telephone and allows it to be removed from the bracelet. To re-attach the telephone, the user simply snaps the telephone back into position, and so re-engages the latches.

[0017] Alternative arrangements are possible, and will depend on the exact design chosen for the apparatus. For instance, some form of press-stud or snap-fit arrangement can be used.

[0018] Due to the telephone part 200 being limited in size, by virtue of having to be accommodated on a wrist strap, it is difficult to provide a battery of sufficient capacity to provide a level of operational and standby time which will be comparable with that offered by regular telephones. Users now expect their telephones to offer standby times of several days.

[0019] In the apparatus 100 disclosed here, the independently operable telephone part 200 contains a primary battery 280, positioned in the lower portion 270. This operates to provide the power for all the functions of the telephone part, but due to its necessarily small size, and hence relatively low power capacity, it can prove difficult to provide an operational or standby time which will meet the user's expectations.

[0020] To address this problem, the strap part 300, which remains attached to the user's wrist, is provided with a secondary power source (see Figure 4), which is operable to supplement the power of the primary source. The power in the telephone's primary battery is supplemented by using the secondary power source to recharge the battery 280 in the telephone.

[0021] The secondary, or auxiliary, power source comprises a number of battery cells 315 which are electrically connected together and disposed in the enlarged portions 310 of the strap 300. The cells are connected together in the required number to make up a battery of the required capacity and voltage.

[0022] Any type of rechargeable battery cell is suitable for use in this application. Typical types of battery technology include Lithium-ion (Li-ion) and Nickel Metal Hydride (NiMH).

[0023] When the telephone part 200 is attached to the strap part 300, electrical connection between the primary and auxiliary power sources is effected via two contacts on the telephone part and mating contacts on the strap part. Of course, these need not use direct electrical connection and may be implemented in any way that allows a charging connection to be established. For instance, ~~refer to the following description of contactless~~ charging by inductive means may be used as described below.

[0024] Associated with the primary power source is a charging circuit which charges the primary power source using power derived from the auxiliary power source. The charging circuit may be disposed in either the telephone part 200 or the strap part 300.

[0025] Through use of the charging connections, or other detection means, it is possible for the charging circuitry to establish when the telephone part 200 is attached to the bracelet 300. If attachment is detected, the voltage or other status of the primary power source 280 is measured and, if below a defined threshold, charging is initiated.

[0026] Through use of such an auxiliary power source, the primary power source 280 in the telephone part 200 may be kept to an acceptable size, ~~whilst~~ while still being easily re-chargeable from a conveniently located source, ~~i.e. that is~~ the strap 300, ~~which~~ forms part of the usual means of carrying the telephone part.

[0027] Of course, it will be necessary to periodically charge the secondary power source ~~periodically~~ also. To that end, a bedside charger apparatus 400 is disclosed in Figure 3.

[0028] Charger 400 connects to the normal domestic mains AC power supply (110V to 240V depending on location). It is primarily designed to be located at the user's bedside so that when the wrist mounted assembly 100 is removed at night, it can be inserted into slot 410 of charger 400 to re-charge the secondary power source overnight.

[0029] Connection between the secondary power source and the charger 400 can be effected through the direct electrical connection, as is normal in currently available telephone charger arrangements. For instance, two conductive contacts could be disposed on a region of the bracelet 300. These

contacts would connect internally with the secondary power source 315. Two sprung complementary contacts would then be provided in the slot 410 of the charger so that when the telephone 100 is inserted, the charging circuit is completed and the secondary power source can be charged.

[0030] However, it may not always be desirable to provide a direct electrical connection between the secondary power source and the charger. An alternative and preferred charging technique relies on an inductive coupling between the charger and the secondary power source.

[0031] This configuration is shown in Figure 4. Charger 400 is connected to the mains AC supply 500. Charger 400 is equipped with a primary coil 450 of a transformer which is used to couple energy from the mains supply 500 to the secondary DC power source 315 via secondary coil 350.

[0032] When the telephone 100 is inserted into the charger 400, the two halves of the transformer 350, 450 are disposed adjacent one another, and so energy is inductively coupled from the primary coil 450 to the secondary coil 350, and so to the charging circuit forming part of the secondary power source 315.

[0033] The secondary coil 350 can be disposed as a planar coil located just beneath the outer surface of one of the enlarged portions 310 of the bracelet part 300. The primary coil can then be located at the rear of the slot 410 of the charger so that when the telephone 100 is inserted, the two coils lie adjacent one another, thus ensuring maximum transfer of energy.

[0034] Figure 4 also shows the power connections between the secondary source 315 and the primary source 280. These are shown as direct electrical connections, although these too could be implemented as an inductive coupling as previously described

[0035] In the light of the foregoing description, it will be clear to the skilled man that various modifications may be made within the scope of the invention.

[0036] The present invention includes any novel feature or combination of features disclosed herein either explicitly or any generalisation thereof irrespective of whether or not it relates to the claimed invention or mitigates any or all of the problems addressed.

ABSTRACT

A portable telephone assembly comprising first and second portions is disclosed. The first portion comprises a primary power source, is independently operable as a portable telephone and is arranged to be detachably connectable to the second portion. The second portion is arranged to be removably attachable to a user and comprises an auxiliary power source operable to supplement the primary power source when the first and second portions are connected.